

# SEQUENCE LISTING

<110> The Iams Company  
Davenport, Gary Mitchell  
Matthews, Jamie Clyde

<120> Compositions and Methods for Increasing Amino Acid Absorption in Mammals

<130> 1448.009US1

<150> US 60/273,263

<151> 2001-03-02

<150> US 60/344,088

<151> 2001-12-26

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<212> DNA

<213> Canis familiaris

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<211> 1995

<212> DNA

<213> Canis familiaris

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Lys	Thr	Leu	Pro	Val	Phe	Pro	Lys	Gln	Asn	Glu	Val	Gln	Ile	Lys	Val
	370					375					380				
Leu	Asn	Ile	Gly	Asn	Gly	Ala	Met	Asn	Val	Ser	Phe	Pro	G		

Glu Ser Leu Asn Ile Thr Met Gly Asp Lys Val Tyr Val Asn Val Thr  
 485 490 495  
 Ser His Asn Ala Ser Glu Tyr Gln Phe Phe Ser Leu Gly Thr Lys Asn  
 500 505 510  
 Ile Thr Ile Ser Ser Thr Gln Gln Ile Ser Gln Asn Cys Thr Lys Val  
 515 520 525  
 Leu Gln Ser Ser Asn Leu Glu Phe Gly Ser Ala Tyr Thr Tyr Val Ile  
 530 535 540  
 Gly Thr Gln Ser Thr Gly Cys Pro Glu Leu His Met Phe Glu Asp Ile  
 545 550 555 560  
 Ser Pro Asn Thr Val Asn Met Ala Leu Gln Ile Pro Gln Tyr Phe Leu  
 565 570 575  
 Ile Thr Cys Gly Glu Val Val Phe Ser Val Thr Gly Leu Glu Phe Ser  
 580 585 590  
 Tyr Ser Gln Ala Pro Ser Asn Met Lys Ser Val Leu Gln Ala Gly Trp  
 595 600 605  
 Leu Leu Thr Val Ala Cys Trp Gln His His Cys Ala His Cys Gly Arg  
 610 615 620  
 Ser Arg Pro Val Gln Thr Val Gly Ile His Pro Ile Cys Gly Ile Ala  
 625 630 635 640  
 Ser Gly Cys Leu Cys Asn Ile Cys His His Gly Pro Val Leu His Leu  
 645 650 655  
 Arg Gln Ser Ser Arg Asp  
 660

<210> 14  
 <211> 706  
 <212> PRT  
 <213> Homo sapien

<400> 14  
 Met Ser Lys Ser His Ser Phe Phe Gly Tyr Pro Leu Ser Ile Phe Phe  
 1 5 10 15  
 Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly Met Arg  
 20 25 30  
 Ala Ile Leu Ile Leu Tyr Phe Thr Asn Phe Ile Ser Trp Asp Asp Asn  
 35 40 45  
 Leu Ser Thr Ala Ile Tyr His Thr Phe Val Ala Leu Cys Tyr Leu Thr  
 50 55 60  
 Pro Ile Leu Gly Ala Leu Ile Ala Asp Ser Trp Leu Gly Lys Phe Lys  
 65 70 75 80  
 Thr Ile Val Ser Leu Ser Ile Val Tyr Thr Ile Gly Gln Ala Val Thr  
 85 90 95  
 Ser Val Ser Ser Ile Asn Asp Leu Thr Asp His Asn His Asp Gly Thr  
 100 105 110  
 Pro Asp Ser Leu Pro Val His Val Val Leu Ser Leu Ile Gly Leu Ala  
 115 120 125  
 Leu Ile Ala Leu Gly Thr Gly Gly Ile Lys Pro Cys Val Ser Ala Phe  
 130 135 140  
 Gly Gly Asp Gln Phe Glu Glu Gly Gln Glu Lys Gln Arg Asn Arg Phe  
 145 150 155 160  
 Phe Ser Ile Phe Tyr Leu Ala Ile Asn Ala Gly Ser Leu Leu Ser Thr  
 165 170 175  
 Ile Ile Thr Pro Met Leu Arg Val Gln Gln Cys Gly Ile His Ser Lys  
 180 185 190  
 Gln Ala Cys Tyr Pro Leu Ala Phe Gly Val Pro Ala Ala Leu Met Ala  
 195 200 205

Val	Ala	Leu	Ile	Val	Phe	Val	Leu	Gly	Ser	Gly	Met	Tyr	Lys	Lys	Phe
210						215					220				
Lys	Pro	Gln	Gly	Asn	Ile	Met	Gly	Lys	Val	Ala	Lys	Cys	Ile	Gly	Phe
225					230					235					240
Ala	Ile	Lys	Asn	Arg	Phe	Arg	His	Arg	Ser	Lys	Ala	Phe	Pro	Lys	Arg
				245					250					255	
Glu	His	Trp	Leu	Asp	Trp	Ala	Lys	Glu	Lys	Tyr	Asp	Glu	Arg	Leu	Ile
			260					265					270		
Ser	Gln	Ile	Lys	Met	Val	Thr	Arg	Val	Met	Phe	Leu	Tyr	Ile	Pro	Leu
		275					280						285		
Pro	Met	Phe	Trp	Ala	Leu	Phe	Asp	Gln	Gln	Gly	Ser	Arg	Trp	Thr	Leu
	290					295					300				
Gln	Ala	Thr	Thr	Met	Ser	Gly	Lys	Ile	Gly	Ala	Leu	Glu	Ile	Gln	Pro
305					310					315					320
Asp	Gln	Met	Gln	Thr	Val	Asn	Ala	Ile	Leu	Ile	Val	Ile	Met	Val	Pro
				325						330					335
Ile	Phe	Asp	Ala	Val	Leu	Tyr	Pro	Leu	Ile	Ala	Lys	Cys	Gly	Phe	Asn
			340					345					350		
Phe	Thr	Ser	Leu	Lys	Lys	Met	Ala	Val	Gly	Met	Val	Leu	Ala	Ser	Met
		355					360					365			
Ala	Phe	Val	Val	Ala	Ala	Ile	Val	Gln	Val	Glu	Ile	Asp	Lys	Thr	Leu
	370					375					380				
Pro	Val	Phe	Pro	Lys	Gly	Asn	Glu	Val	Gln	Ile	Lys	Val	Leu	Asn	Ile
385					390					395					400
Gly	Asn	Asn	Thr	Met	Asn	Ile	Ser	Leu	Pro	Gly	Glu	Met	Val	Thr	Leu
			405						410					415	
Gly	Pro	Met	Ser	Gln	Thr	Asn	Ala	Phe	Met	Thr	Phe	Asp	Val	Asn	Lys
			420					425					430		
Leu	Thr	Arg	Ile	Asn	Ile	Ser	Ser	Pro	Gly	Ser	Pro	Val	Thr	Ala	Val
		435					440					445			
Thr	Asp	Asp	Phe	Lys	Gln	Gly	Gln	Arg	His	Thr	Leu	Leu	Val	Trp	Ala
	450					455					460				
Pro	Asn	His	Tyr	Gln	Val	Val	Lys	Asp	Gly	Leu	Asn	Gln	Lys	Pro	Glu
465					470					475					480
Lys	Gly	Glu	Asn	Gly	Ile	Arg	Phe	Val	Asn	Thr	Phe	Asn	Glu	Leu	Ile
			485					490					495		
Thr	Ile	Thr	Met	Ser	Gly	Lys	Val	Tyr	Ala	Asn	Ile	Ser	Ser	Tyr	Asn
			500					505					510		
Ala	Ser	Thr	Tyr	Gln	Phe	Phe	Pro	Ser	Gly	Ile	Lys	Gly	Phe	Thr	Ile
		515					520					525			
Ser	Ser	Thr	Glu	Ile	Pro	Pro	Gln	Cys	Gln	Pro	Asn	Phe	Asn	Thr	Phe
		530				535					540				
Tyr	Leu	Glu	Phe	Gly	Ser	Ala	Tyr	Thr	Tyr	Ile	Val	Gln	Arg	Lys	Asn
545					550					555					560
Asp	Ser	Cys	Pro	Glu	Val	Lys	Val	Phe	Glu	Asp	Ile	Ser	Ala	Asn	Thr
			565					570						575	
Val	Asn	Met	Ala	Leu	Gln	Ile	Pro	Gln	Tyr	Phe	Leu	Leu	Thr	Cys	Gly
			580					585					590		
Glu	Val	Val	Phe	Ser	Val	Thr	Gly	Leu	Glu	Phe	Ser	Tyr	Ser	Gln	Ala
		595					600					605			
Pro	Ser	Asn	Met	Lys	Ser	Val	Leu	Gln	Ala	Gly	Trp	Leu	Leu	Thr	Val
		610				615					620				
Ala	Val	Gly	Asn	Ile	Ile	Val	Leu	Ile	Val	Ala	Gly	Ala	Gly	Gln	Phe
625					630					635					640
Ser	Lys	Gln	Trp	Ala	Glu	Tyr	Ile	Leu	Phe	Ala	Ala	Leu	Leu	Leu	Val
			645					650						655	
Val	Cys	Val	Ile	Phe	Ala	Ile	Met	Ala	Arg	Phe	Tyr	Thr	Tyr	Ile	Asn
			660					665					670		

Pro Ala Glu Ile Glu Ala Gln Phe Asp Glu Asp Glu Lys Lys Asn Arg  
675 680 685  
Leu Glu Lys Ser Asn Pro Tyr Phe Met Ser Gly Ala Asn Ser Gln Lys  
690 695 700  
Gln Met  
705

<210> 15  
<211> 710  
<212> PRT  
<213> Rattus norvegicus

<400> 15  
Met Gly Met Ser Lys Ser Arg Gly Cys Phe Gly Tyr Pro Leu Ser Ile  
1 5 10 15  
Phe Phe Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly  
20 25 30  
Met Arg Ala Leu Leu Val Leu Tyr Phe Arg Asn Phe Leu Gly Trp Asp  
35 40 45  
Asp Asp Leu Ser Thr Ala Ile Tyr His Thr Phe Val Ala Leu Cys Tyr  
50 55 60  
Leu Thr Pro Ile Leu Gly Ala Leu Ile Ala Asp Ser Trp Leu Gly Lys  
65 70 75 80  
Phe Lys Thr Ile Val Ser Leu Ser Ile Val Tyr Thr Ile Gly Gln Ala  
85 90 95  
Val Ile Ser Val Ser Ser Ile Asn Asp Leu Thr Asp His Asp His Asp  
100 105 110  
Gly Ser Pro Asn Asn Leu Pro Leu His Val Ala Leu Ser Met Ile Gly  
115 120 125  
Leu Ala Leu Ile Ala Leu Gly Thr Gly Gly Ile Lys Pro Cys Val Ser  
130 135 140  
Ala Phe Gly Gly Asp Gln Phe Glu Glu Gly Gln Glu Lys Gln Arg Asn  
145 150 155 160  
Arg Phe Phe Ser Ile Phe Tyr Leu Ala Ile Asn Ala Gly Ser Leu Leu  
165 170 175  
Ser Thr Ile Ile Thr Pro Ile Leu Arg Val Gln Gln Cys Gly Ile His  
180 185 190  
Ser Gln Gln Ala Cys Tyr Pro Leu Ala Phe Gly Val Pro Ala Ala Leu  
195 200 205  
Met Ala Val Ala Leu Ile Val Phe Val Leu Gly Ser Gly Met Tyr Lys  
210 215 220  
Lys Phe Gln Pro Gln Gly Asn Ile Met Gly Lys Val Ala Lys Cys Ile  
225 230 235 240  
Gly Phe Ala Ile Lys Asn Arg Phe Arg His Arg Ser Lys Ala Phe Pro  
245 250 255  
Lys Arg Glu His Trp Leu Asp Trp Ala Lys Glu Lys Tyr Asp Glu Arg  
260 265 270  
Leu Ile Ser Gln Ile Lys Met Val Thr Lys Val Met Phe Leu Tyr Ile  
275 280 285  
Pro Leu Pro Met Phe Trp Ala Leu Phe Asp Gln Gln Gly Ser Arg Trp  
290 295 300  
Thr Leu Gln Ala Thr Thr Met Thr Gly Lys Ile Gly Thr Ile Glu Ile  
305 310 315 320  
Gln Pro Asp Gln Met Gln Thr Val Asn Ala Ile Leu Ile Val Ile Met  
325 330 335  
Val Pro Ile Val Asp Ala Val Val Tyr Pro Leu Ile Ala Lys Cys Gly  
340 345 350

1003740-03040

Phe Asn Phe Thr Ser Leu Lys Lys Met Thr Val Gly Met Phe Leu Ala  
355 360 365  
Ser Met Ala Phe Val Val Ala Ala Ile Val Gln Val Glu Ile Asp Lys  
370 375 380  
Thr Leu Pro Val Phe Pro Ser Gly Asn Gln Val Gln Ile Lys Val Leu  
385 390 395 400  
Asn Ile Gly Asn Asn Asp Met Ala Val Tyr Phe Pro Gly Lys Asn Val  
405 410 415  
Thr Val Ala Gln Met Ser Gln Thr Asp Thr Phe Met Thr Phe Asp Val  
420 425 430  
Asp Gln Leu Thr Ser Ile Asn Val Ser Ser Pro Gly Ser Pro Gly Val  
435 440 445  
Thr Thr Val Ala His Glu Phe Glu Pro Gly His Arg His Thr Leu Leu  
450 455 460  
Val Trp Gly Pro Asn Leu Tyr Arg Val Val Lys Asp Gly Leu Asn Gln  
465 470 475 480  
Lys Pro Glu Lys Gly Glu Asn Gly Ile Arg Phe Val Ser Thr Leu Asn  
485 490 495  
Glu Met Ile Thr Ile Lys Met Ser Gly Lys Val Tyr Glu Asn Val Thr  
500 505 510  
Ser His Ser Ala Ser Asn Tyr Gln Phe Phe Pro Ser Gly Gln Lys Asp  
515 520 525  
Tyr Thr Ile Asn Thr Thr Glu Ile Ala Pro Asn Cys Ser Ser Asp Phe  
530 535 540  
Lys Ser Ser Asn Leu Asp Phe Gly Ser Ala Tyr Thr Tyr Val Ile Arg  
545 550 555 560  
Ser Arg Ala Ser Asp Gly Cys Leu Glu Val Lys Glu Phe Glu Asp Ile  
565 570 575  
Pro Pro Asn Thr Val Asn Met Ala Leu Gln Ile Pro Gln Tyr Phe Leu  
580 585 590  
Leu Thr Cys Gly Glu Val Val Phe Ser Val Thr Gly Leu Glu Phe Ser  
595 600 605  
Tyr Ser Gln Ala Pro Ser Asn Met Lys Ser Val Leu Gln Ala Gly Trp  
610 615 620  
Leu Leu Thr Val Ala Ile Gly Asn Ile Ile Val Leu Ile Val Ala Glu  
625 630 635 640  
Ala Gly His Phe Asp Lys Gln Trp Ala Glu Tyr Val Leu Phe Ala Ser  
645 650 655  
Leu Leu Leu Val Val Cys Ile Ile Phe Ala Ile Met Ala Arg Phe Tyr  
660 665 670  
Thr Tyr Ile Asn Pro Ala Glu Ile Glu Ala Gln Phe Asp Glu Asp Glu  
675 680 685  
Lys Lys Lys Gly Val Gly Lys Glu Asn Pro Tyr Ser Ser Leu Glu Pro  
690 695 700  
Val Ser Gln Thr Asn Met  
705 710

<210> 16

<211> 709

<212> PRT

<213> Mus musculus

<400> 16

Met Gly Met Ser Lys Ser Arg Gly Cys Phe Gly Tyr Pro Leu Ser Ile  
1 5 10 15  
Phe Phe Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly  
20 25 30

Met	Arg	Ala	Leu	Leu	Val	Leu	Tyr	Phe	Arg	Asn	Phe	Leu	Gly	Trp	Asp		
		35					40					45					
Asp	Asn	Leu	Ser	Thr	Ala	Ile	Tyr	His	Thr	Phe	Val	Ala	Leu	Cys	Tyr		
	50					55					60						
Leu	Thr	Pro	Ile	Leu	Gly	Ala	Leu	Ile	Ala	Asp	Ser	Trp	Leu	Gly	Lys		
65					70					75					80		
Phe	Lys	Thr	Ile	Val	Ser	Leu	Ser	Ile	Val	Tyr	Thr	Ile	Gly	Gln	Ala		
			85						90					95			
Val	Ile	Ser	Val	Ser	Ser	Ile	Asn	Asp	Leu	Thr	Asp	His	Asp	His	Asn		
			100					105					110				
Gly	Ser	Pro	Asp	Ser	Leu	Pro	Val	His	Val	Ala	Leu	Ser	Met	Val	Gly		
		115						120					125				
Leu	Ala	Leu	Ile	Ala	Leu	Gly	Thr	Gly	Gly	Ile	Lys	Pro	Cys	Val	Ser		
	130					135					140						
Ala	Phe	Gly	Gly	Asp	Gln	Phe	Glu	Glu	Gly	Gln	Glu	Lys	Gln	Arg	Asn		
145					150					155					160		
Arg	Phe	Phe	Ser	Ile	Phe	Tyr	Leu	Ala	Ile	Asn	Gly	Gly	Ser	Leu	Leu		
				165					170					175			
Ser	Thr	Ile	Ile	Thr	Pro	Ile	Leu	Arg	Val	Gln	Gln	Cys	Gly	Ile	His		
			180					185					190				
Ser	Gln	Gln	Ala	Cys	Tyr	Pro	Leu	Ala	Phe	Gly	Val	Pro	Ala	Ala	Leu		
		195					200					205					
Met	Ala	Val	Ala	Leu	Ile	Val	Phe	Val	Leu	Gly	Ser	Gly	Met	Tyr	Lys		
		210				215						220					
Lys	Phe	Gln	Pro	Gln	Gly	Asn	Ile	Met	Gly	Lys	Val	Ala	Lys	Cys	Ile		
225					230					235					240		
Gly	Phe	Ala	Ile	Lys	Asn	Arg	Phe	Arg	His	Arg	Ser	Lys	Ala	Tyr	Pro		
				245					250					255			
Lys	Arg	Glu	His	Trp	Leu	Asp	Trp	Ala	Lys	Glu	Lys	Tyr	Asp	Glu	Arg		
			260					265					270				
Leu	Ile	Ser	Gln	Ile	Lys	Met	Val	Thr	Lys	Val	Met	Phe	Leu	Phe	Ile		
		275					280					285					
Pro	Leu	Pro	Met	Phe	Trp	Gly	Leu	Phe	Asp	Gln	Gln	Gly	Ser	Arg	Trp		
		290				295						300					
Thr	Leu	Gln	Ala	Thr	Thr	Met	Asn	Gly	Lys	Ile	Gly	Ala	Asn	Glu	Ile		
305					310					315					320		
Gln	Pro	Asp	Gln	Met	Gln	Thr	Val	Asn	Ala	Ile	Leu	Asn	Val	Asn	Asn		
				325					330					335			
Gly	Pro	Asn	Val	Asp	Ala	Val	Val	Tyr	Arg	Ser	Ile	Ala	Lys	Cys	Gly		
			340					345					350				
Phe	Asn	Phe	Thr	Ser	Leu	Lys	Lys	Met	Thr	Val	Gly	Met	Phe	Leu	Ala		
		355					360					365					
Ser	Met	Ala	Phe	Val	Val	Ala	Ala	Ile	Val	Gln	Val	Glu	Ile	Asp	Lys		
		370				375						380					
Thr	Leu	Pro	Val	Phe	Pro	Gly	Gly	Asn	Gln	Val	Gln	Ile	Lys	Val	Leu		
385					390					395					400		
Asn	Ile	Gly	Asn	Asn	Asn	Met	Thr	Val	His	Phe	Pro	Gly	Asn	Ser	Val		
				405					410					415			
Thr	Leu	Ala	Gln	Met	Ser	Gln	Thr	Asp	Thr	Phe	Met	Thr	Phe	Asp	Ile		
			420					425					430				
Asp	Lys	Leu	Thr	Ser	Ile	Asn	Ile	Ser	Ser	Ser	Gly	Ser	Pro	Gly	Val		
		435				440						445					
Thr	Thr	Val	Ala	His	Asp	Phe	Glu	Gln	Gly	His	Arg	His	Asn	Leu	Leu		
	450					455					460						
Val	Trp	Glu	Pro	Ser	Gln	Tyr	Arg	Val	Val	Lys	Asp	Gly	Pro	Asn	Gln		
465					470					475					480		
Lys	Pro	Glu	Lys	Gly	Glu	Asn	Gly	Ile	Arg	Phe	Val	Asn	Thr	Leu	Asn		
			485					490						495			

Glu Met Val Thr Asn Lys Met Ser Gly Lys Val Tyr Glu Lys Phe Thr  
500 505 510  
Ser His Asn Ala Ser Gly Tyr Lys Phe Leu Pro Ser Gly Glu Lys Gln  
515 520 525  
Tyr Thr Ile Asn Thr Thr Ala Val Ala Pro Thr Cys Leu Thr Asp Phe  
530 535 540  
Lys Ser Ser Asn Leu Asp Phe Gly Ser Ala Tyr Thr Tyr Val Ile Arg  
545 550 555 560  
Arg Ala Ser Asp Gly Cys Leu Glu Val Lys Glu Phe Glu Asp Ile Pro  
565 570 575  
Pro Asn Thr Val Asn Met Ala Leu Gln Ile Pro Gln Tyr Phe Leu Leu  
580 585 590  
Thr Cys Gly Glu Val Val Phe Ser Val Thr Gly Leu Glu Phe Ser Tyr  
595 600 605  
Ser Gln Ala Pro Ser Asn Met Lys Ser Val Leu Gln Ala Gly Trp Leu  
610 615 620  
Leu Thr Val Ala Val Gly Asn Ile Ile Val Leu Ile Val Ala Gly Ala  
625 630 635 640  
Gly His Phe Pro Lys Gln Trp Ala Glu Tyr Ile Leu Phe Ala Ser Leu  
645 650 655  
Leu Leu Val Val Cys Val Ile Phe Ala Ile Met Ala Arg Phe Tyr Thr  
660 665 670  
Tyr Ile Asn Pro Ala Glu Ile Glu Ala Gln Phe Asp Glu Asp Glu Lys  
675 680 685  
Lys Lys Gly Ile Gly Lys Glu Asn Pro Tyr Ser Ser Leu Glu Pro Val  
690 695 700  
Ser Gln Thr Asn Met  
705

<210> 17  
<211> 707  
<212> PRT  
<213> Ovis aries

<400> 17  
Met Gly Met Ser Val Pro Lys Ser Cys Phe Gly Tyr Pro Leu Ser Ile  
1 5 10 15  
Phe Phe Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly  
20 25 30  
Met Arg Ala Leu Leu Ile Leu Tyr Phe Gln Arg Phe Leu Gly Trp Asn  
35 40 45  
Asp Asn Leu Gly Thr Ala Ile Tyr His Thr Phe Val Ala Leu Cys Tyr  
50 55 60  
Leu Thr Pro Ile Leu Gly Ala Leu Ile Ala Asp Ser Trp Leu Gly Lys  
65 70 75 80  
Phe Lys Thr Ile Val Ser Leu Ser Ile Val Tyr Thr Ile Gly Gln Val  
85 90 95  
Val Ile Ala Val Ser Ser Ile Asn Asp Leu Thr Asp Phe Asn His Asp  
100 105 110  
Gly Thr Pro Asn Asn Ile Ser Val His Val Ala Leu Ser Met Ile Gly  
115 120 125  
Leu Val Leu Ile Ala Leu Gly Thr Gly Gly Ile Lys Pro Cys Val Ser  
130 135 140  
Ala Phe Gly Gly Asp Gln Phe Glu Glu Gly Gln Glu Lys Gln Arg Asn  
145 150 155 160  
Arg Phe Phe Ser Ile Phe Tyr Leu Ala Ile Asn Ala Gly Ser Leu Leu  
165 170 175



Ser	Thr	Ile	Ile	Thr	Pro	Met	Leu	Arg	Val	Gln	Val	Cys	Gly	Ile	His
			180					185					190		
Ser	Lys	Gln	Ala	Cys	Tyr	Pro	Leu	Ala	Phe	Gly	Val	Pro	Ala	Ala	Leu
		195					200					205			
Met	Ala	Val	Ser	Leu	Ile	Val	Phe	Val	Ile	Gly	Ser	Gly	Met	Tyr	Lys
		210				215					220				
Lys	Val	Gln	Pro	Gln	Gly	Asn	Ile	Met	Ser	Lys	Val	Ala	Arg	Cys	Ile
225					230					235				240	
Gly	Phe	Ala	Ile	Lys	Asn	Arg	Ile	Ser	His	Arg	Ser	Lys	Lys	Phe	Pro
				245					250					255	
Lys	Arg	Glu	His	Trp	Leu	Asp	Trp	Ala	Ser	Glu	Lys	Tyr	Asp	Glu	Arg
			260					265						270	
Leu	Ile	Ser	Gln	Ile	Lys	Met	Val	Thr	Arg	Val	Met	Phe	Leu	Tyr	Ile
		275					280					285			
Pro	Leu	Pro	Met	Phe	Trp	Ala	Leu	Phe	Asp	Gln	Gln	Gly	Ser	Arg	Trp
		290				295					300				
Thr	Leu	Gln	Ala	Thr	Thr	Met	Ser	Gly	Lys	Ile	Gly	Ile	Ile	Glu	Ile
305					310					315				320	
Gln	Pro	Asp	Gln	Met	Gln	Thr	Val	Asn	Ala	Ile	Leu	Ile	Val	Val	Met
				325					330					335	
Val	Pro	Ile	Val	Asp	Ala	Val	Val	Tyr	Pro	Leu	Ile	Ala	Lys	Cys	Gly
			340					345					350		
Leu	Asn	Phe	Thr	Ser	Leu	Lys	Lys	Met	Thr	Val	Gly	Met	Phe	Leu	Ala
		355					360					365			
Ser	Met	Ala	Phe	Val	Ala	Ala	Ala	Ile	Val	Gln	Val	Asp	Ile	Asp	Lys
		370				375					380				
Thr	Leu	Pro	Val	Phe	Pro	Lys	Gly	Asn	Glu	Val	Gln	Ile	Lys	Val	Leu
385					390					395				400	
Asn	Ile	Gly	Asn	Asn	Ser	Met	Thr	Val	Ser	Phe	Pro	Gly	Thr	Thr	Val
				405					410					415	
Thr	Cys	Asp	Gln	Met	Ser	Gln	Thr	Asn	Gly	Phe	Leu	Thr	Phe	Asn	Val
			420					425					430		
Asp	Asn	Leu	Ser	Ile	Asn	Ile	Ser	Ser	Thr	Gly	Thr	Pro	Val	Thr	Pro
		435					440					445			
Val	Thr	His	Asn	Phe	Glu	Ser	Gly	His	Arg	His	Thr	Leu	Leu	Val	Trp
		450				455					460				
Ala	Pro	Ser	Asn	Tyr	Gln	Val	Val	Lys	Asp	Gly	Leu	Asn	Gln	Lys	Pro
465					470					475				480	
Glu	Lys	Gly	Arg	Asn	Gly	Ile	Arg	Phe	Val	Asn	Ala	Phe	Gly	Glu	Ser
				485					490					495	
Phe	Gly	Val	Thr	Met	Asp	Gly	Glu	Val	Tyr	Asn	Asn	Val	Ser	Gly	His
			500					505					510		
Asn	Ala	Ser	Glu	Tyr	Leu	Phe	Phe	Ser	Ser	Gly	Val	Lys	Ser	Phe	Thr
		515					520					525			
Ile	Asn	Ser	Pro	Glu	Ile										

Phe Ser Glu Gln Trp Ala Glu Tyr Val Leu Phe Ala Ala Leu Leu Leu  
                                 645                                650                                655  
 Val Val Cys Ile Ile Phe Ala Ile Met Ala Arg Phe Tyr Thr Tyr Val  
                                 660                                665                                670  
 Asn Pro Ala Glu Ile Glu Ala Gln Phe Asp Glu Asp Asp Lys Glu Asp  
                                 675                                680                                685  
 Asp Leu Glu Lys Ser Asn Pro Tyr Ala Lys Leu Asp Phe Val Ser Gln  
                                 690                                695                                700  
 Thr Gln Met  
 705

<210> 18

<211> 707

<212> PRT

<213> Oryctolagus cuniculus

<400> 18

Met Gly Met Ser Lys Ser Leu Ser Cys Phe Gly Tyr Pro Leu Ser Ile  
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 Phe Phe Ile Val Val Asn Glu Phe Cys Glu Arg Phe Ser Tyr Tyr Gly  
                                 20                                25                                30  
 Met Arg Ala Leu Leu Ile Leu Tyr Phe Arg Asn Phe Ile Gly Trp Asp  
                                 35                                40                                45  
 Asp Asn Leu Ser Thr Val Ile Tyr His Thr Phe Val Ala Leu Cys Tyr  
                                 50                                55                                60  
 Leu Thr Pro Ile Leu Gly Ala Leu Ile Ala Asp Ala Trp Leu Gly Lys  
   65                                70                                75                                80  
 Phe Lys Thr Ile Val Trp Leu Ser Ile Val Tyr Thr Ile Gly Gln Ala  
                                 85                                90                                95  
 Val Thr Ser Leu Ser Ser Val Asn Glu Leu Thr Asp Asn Asn His Asp  
                                 100                                105                                110  
 Gly Thr Pro Asp Ser Leu Pro Val His Val Ala Val Cys Met Ile Gly  
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 Arg Phe Phe Ser Ile Phe Tyr Leu Ala Ile Asn Ala Gly Ser Leu Leu  
                                 165                                170                                175  
 Ser Thr Ile Ile Thr Pro Met Val Arg Val Gln Gln Cys Gly Ile His  
                                 180                                185                                190  
 Val Lys Gln Ala Cys Tyr Pro Leu Ala Phe Gly Ile Pro Ala Ile Leu  
                                 195                                200                                205  
 Met Ala Val Ser Leu Ile Val Phe Ile Ile Gly Ser Gly Met Tyr Lys  
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 Lys Phe Lys Pro Gln Gly Asn Ile Leu Ser Lys Val Val Lys Cys Ile  
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 Cys Phe Ala Ile Lys Asn Arg Phe Arg His Arg Ser Lys Gln Phe Pro  
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 Lys Arg Ala His Trp Leu Asp Trp Ala Lys Glu Lys Tyr Asp Glu Arg  
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 Leu Ile Ala Gln Ile Lys Met Val Thr Arg Val Leu Phe Leu Tyr Ile  
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 Pro Leu Pro Met Phe Trp Ala Leu Phe Asp Gln Gln Gly Ser Arg Trp  
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 Thr Leu Gln Ala Thr Thr Met Ser Gly Arg Ile Gly Ile Leu Glu Ile  
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Gln Pro Asp Gln Met Gln Thr Val Asn Thr Ile Leu Ile Ile Ile Leu  
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Val Pro Ile Met Asp Ala Val Val Tyr Pro Leu Ile Ala Lys Cys Gly  
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Leu Asn Phe Thr Ser Leu Lys Lys Met Thr Ile Gly Met Phe Leu Ala  
355 360 365  
Ser Met Ala Phe Val Ala Ala Ala Ile Leu Gln Val Glu Ile Asp Lys  
370 375 380  
Thr Leu Pro Val Phe Pro Lys Ala Asn Glu Val Gln Ile Lys Val Leu  
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Asn Val Gly Ser Glu Asn Met Ile Ile Ser Leu Pro Gly Gln Thr Val  
405 410 415  
Thr Leu Asn Gln Met Ser Gln Thr Asn Glu Phe Met Thr Phe Asn Glu  
420 425 430  
Asp Thr Leu Thr Ser Ile Asn Ile Thr Ser Gly Ser Gln Val Thr Met  
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Ile Thr Pro Ser Leu Glu Ala Gly Gln Arg His Thr Leu Leu Val Trp  
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Ala Pro Asn Asn Tyr Arg Val Val Asn Asp Gly Leu Thr Gln Lys Ser  
465 470 475 480  
Asp Lys Gly Glu Asn Gly Ile Arg Phe Val Asn Thr Tyr Ser Gln Pro  
485 490 495  
Ile Asn Val Thr Met Ser Gly Lys Val Tyr Glu His Ile Ala Ser Tyr  
500 505 510  
Asn Ala Ser Glu Tyr Gln Phe Phe Thr Ser Gly Val Lys Gly Phe Thr  
515 520 525  
Val Ser Ser Ala Gly Ile Ser Glu Gln Cys Arg Arg Asp Phe Glu Ser  
530 535 540  
Pro Tyr Leu Glu Phe Gly Ser Ala Tyr Thr Tyr Leu Ile Thr Ser Gln  
545 550 555 560  
Ala Thr Gly Cys Pro Gln Val Thr Glu Phe Glu Asp Ile Pro Pro Asn  
565 570 575  
Thr Met Asn Met Ala Trp Gln Ile Pro Gln Tyr Phe Leu Ile Thr Ser  
580 585 590  
Gly Glu Val Val Phe Ser Ile Thr Gly Leu Glu Phe Ser Tyr Ser Gln  
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Ala Pro Ser Asn Met Lys Ser Val Leu Gln Asp Arg Trp Leu Leu Thr  
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Val Ala Val Gly Asn Ile Ile Val Leu Ile Val Ala Gly Ala Gly Gln  
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Ile Asn Lys Gln Trp Ala Glu Tyr Ile Leu Phe Ala Ala Leu Leu Leu  
645 650 655  
Val Val Cys Val Ile Phe Ala Ile Met Ala Arg Phe Tyr Thr Tyr Val  
660 665 670  
Asn Pro Ala Glu Ile Glu Ala Gln Phe Glu Glu Asp Glu Lys Lys Lys  
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Asn Pro Glu Lys Asn Asp Leu Tyr Pro Ser Val Ala Pro Val Ser Gln  
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Thr Gln Met  
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<210> 19  
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<212> PRT  
<213> Gallus gallus

20

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 Leu Arg Ser Asp Asn Phe Thr Ser Lys Pro Glu Glu Gly Lys Asn Leu  
 485 490 495  
 Val Arg Phe Val Asn Asn Leu Pro Gln Thr Val Asn Ile Thr Met Gly  
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 Pro Phe Ser Gly Gly Arg Thr Tyr Asp Ile Val Ile Thr Ala Gly Ser  
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 Thr Asn Cys Lys Pro Thr Ser Glu Lys Leu Gly Tyr Gly Gly Ala Tyr  
 545 550 555 560  
 Thr Ile Val Ile Asn Glu Cys Ser Gly Asp Val Thr Gln Leu Arg Tyr  
 565 570 575  
 Ile Glu Asp Ile Gln Pro Asn Thr Val His Met Ala Trp Gln Ile Pro  
 580 585 590  
 Gln Tyr Phe Ile Leu Thr Cys Gly Glu Val Val Phe Ser Val Thr Gly  
 595 600 605  
 Leu Glu Phe Ser Tyr Ser Gln Ala Pro Ser Asn Met Lys Ser Val Leu  
 610 615 620  
 Gln Ala Gly Trp Leu Leu Thr Val Ala Val Gly Asn Ile Ile Val Leu  
 625 630 635 640  
 Ile Val Ala Gly Ala Ser Lys Leu Ser Glu Gln Trp Ala Glu Tyr Val  
 645 650 655  
 Leu Phe Ala Ala Leu Leu Phe Ala Val Cys Ile Ile Phe Ala Val Met  
 660 665 670  
 Ala Tyr Phe Tyr Thr Tyr Thr Asp Pro Asn Glu Val Glu Ala Gln Leu  
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 Gly Lys Glu Ser Glu Ala Val Ser Gln Met  
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<210> 20  
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<210> 21

<211> 708

<212> PRT

<213> Canis familiaris

<400> 21

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Met Arg Ala Leu Leu Ile Leu Tyr Phe Arg Arg Phe Ile Gly Trp Asp
35          40          45
Asp Asn Leu Ser Thr Ala Ile Tyr His Thr Phe Val Ala Leu Cys Tyr
50          55          60
Leu Thr Pro Ile Leu Gly Ala Leu Ile Ala Asp Ser Trp Leu Gly Lys
65          70          75          80
Phe Lys Thr Ile Val Ser Leu Ser Ile Val Tyr Thr Ile Gly Gln Ala
85          90          95
Val Thr Ala Val Ser Ser Ile Asn Asp Leu Thr Asp Tyr Asn Lys Asp
100          105          110
Gly Thr Pro Asp Asn Leu Ser Val His Val Ala Leu Ser Met Ile Gly
115          120          125
Leu Ala Leu Ile Ala Leu Gly Thr Gly Gly Ile Lys Pro Cys Val Ser
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Ala Phe Gly Gly Asp Gln Phe Glu Glu Gly Gln Glu Lys Gln Arg Asn
145          150          155          160
Arg Phe Phe Ser Ile Phe Tyr Leu Ala Ile Asn Ala Gly Ser Leu Ile
165          170          175
Ser Thr Ile Val Thr Pro Met Leu Arg Val His Glu Cys Gly Ile Tyr
180          185          190
Ser Gln Lys Ala Cys Tyr Pro Leu Ala Phe Gly Val Pro Ala Ala Leu
195          200          205
Met Ala Val Ser Leu Ile Val Phe Val Ile Gly Ser Gly Met Tyr Lys
210          215          220
Lys Phe Gln Pro Gln Gly Asn Val Met Gly Lys Val Val Lys Cys Ile
225          230          235          240
Gly Phe Ala Leu Lys Asn Arg Phe Arg His Arg Ser Lys Gln Phe Pro
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305					310					315					320	
Gln	Pro	Asp	Gln	Met	Gln	Thr	Val	Asn	Ala	Ile	Leu	Ile	Val	Val	Met	
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Phe	Asn	Phe	Thr	Ser	Leu	Lys	Arg	Met	Thr	Val	Gly	Met	Phe	Leu	Ala	
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	370					375					380					
Thr	Leu	Pro	Val	Phe	Pro	Lys	Gln	Asn	Glu	Val	Gln	Ile	Lys	Val	Leu	
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Thr	Val	Ser	Gln	Met	Ser	Gln	Ser	Asp	Gly	Phe	Met	Thr	Phe	Asp	Val	
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Asp	Lys	Leu	Thr	Ser	Ile	Asn	Ile	Ser	Ser	Thr	Gly	Ser	Pro	Val	Ile	
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Pro	Val	Thr	Tyr	Asn	Phe	Glu	Gln	Gly	His	Arg	His	Thr	Leu	Leu	Val	
	450					455					460					
Trp	Ala	Pro	Asn	Asn	Tyr	Arg	Val	Val	Lys	Asp	Gly	Leu	Asn	Gln	Lys	
465					470					475					480	
Pro	Glu	Lys	Gly	Glu	Asn	Gly	Ile	Arg	Phe	Ile	Asn	Ser	Leu	Asn	Glu	
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Ser	Leu	Asn	Ile	Thr	Met	Gly	Asp	Lys	Val	Tyr	Val	Asn	Val	Thr	Ser	
		500						505					510			
His	Asn	Ala	Ser	Glu	Tyr	Gln	Phe	Phe	Ser	Leu	Gly	Thr	Lys	Asn	Ile	
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Gln	Ser	Ser	Asn	Leu	Glu	Phe	Gly	Ser	Ala	Tyr	Thr	Tyr	Val	Ile	Gly	
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Thr	Gln	Ser	Thr	Gly	Cys	Pro	Glu	Leu	His	Met	Phe	Glu	Asp	Ile	Ser	
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Pro	Asn	Thr	Val	Asn	Met	Ala	Leu	Gln	Ile	Pro	Gln	Tyr	Phe	Leu	Ile	
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Thr	Cys	Gly	Glu	Val	Val	Phe	Ser	Val	Thr	Gly	Leu	Glu	Phe	Ser	Tyr	
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Ser	Gln	Ala	Pro	Ser	Asn	Met	Lys	Ser	Val	Leu	Gln	Ala	Gly	Trp	Leu	
	610					615					620					
Leu	Thr	Val	Ala	Val	Gly	Asn	Ile	Ile	Val	Leu	Ile	Val	Ala	Gly	Ala	
625					630					635					640	
Gly	Gln	Phe	Ser	Glu	Gln	Trp	Ala	Glu	Tyr	Ile	Leu	Phe	Ala	Ala	Leu	
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Leu	Leu	Val	Val	Cys	Val	Ile	Phe	Ala	Ile	Met	Ala	Arg	Phe	Tyr	Thr	
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Tyr	Val	Asn	Pro	Ala	Glu	Ile	Glu	Ala	Gln	Phe	Asp	Asp	Asp	Glu	Lys	
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Lys	Asn	Leu	Glu	Lys	Met	Asn	Val	Tyr	Ser	Thr	Val	Thr	Pro	Val	Ser	
	690					695					700					
Gln	Thr	Gln	Met													
705																